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MULTIDISCIPLINARY CARE IN THE TREATMENT OF DIABETIC FOOT: A LITERATURE REVIEW

ASSISTÊNCIA MULTIDISCIPLINAR NO TRATAMENTO DO PÉ DIABÉTICO: REVISÃO DA LITERATURA

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Abstract. Diabetic foot is a chronic lesion associated with diabetic neuropathy and peripheral arterial disease, characterized by affecting the lower limbs as a result of uncontrolled diabetes mellitus (DM), constituting one of the main causes of non-traumatic amputations worldwide. The management of this condition must be integrated and specialized, aiming at the functional rehabilitation of the affected limb. In this context, this study aimed to analyze the importance of multidisciplinary care in the treatment of diabetic foot, highlighting its benefits in preventing complications and in patient rehabilitation. This is an integrative literature review conducted in five databases: BDENF, LILACS, MEDLINE, IBECS, and PubMed/MEDLINE, through the Virtual Health Library (VHL). The descriptors "Foot ulcer" and "Multidisciplinary team" were used, combined with the Boolean operator "AND," with a descriptive data analysis. Ten original articles were selected for the final sample, published between 2020 and 2025, in Portuguese, English, and Spanish. The results show that the interdisciplinary work of the multidisciplinary team is associated with significant clinical outcomes, including the reduction of major and minor amputation rates, shorter hospitalization time, accelerated healing process, and reduced hospital costs. The findings reinforce that integrated action among professionals from different health areas, such as nursing, vascular surgery, podiatry, nutrition, and physiotherapy, is essential not only for defining therapeutic treatment but also for developing educational actions directed at patients. It is concluded that multiprofessional practice is crucial for a safe and holistic approach to patients with diabetic foot, and treatment should be based on a collaborative model that integrates the clinical characteristics of the individual, with a preventive, educational, and rehabilitative focus.

Keywords: Diabetes mellitus; Diabetic foot; Risk factors.

Resumo. O pé diabético é uma lesão crônica associada à neuropatia diabética e à doença arterial periférica, caracterizando-se por acometer os membros inferiores em decorrência do descontrole do diabetes mellitus (DM), constituindo um dos principais fatores de amputações não traumáticas no mundo. A abordagem dessa condição deve ser integrada e especializada, visando à reabilitação funcional da extremidade afetada. Nesse contexto, esta pesquisa teve como objetivo analisar a importância da assistência multidisciplinar no tratamento do pé diabético, destacando seus benefícios na prevenção de complicações e na reabilitação dos pacientes. Trata-se de uma revisão integrativa da literatura, realizada em cinco bases de dados: BDENF, LILACS, MEDLINE, IBECS e PubMed/MEDLINE, por meio da Biblioteca Virtual em Saúde (BVS). Utilizaram-se os descritores "Úlcera no pé" e "Equipe multidisciplinar", combinados pelo operador booleano "AND", tendo uma análise de dados descritiva. Foram selecionados 10 artigos originais para a amostra final, publicados entre 2020 e 2025, nos idiomas português, inglês e espanhol. Os resultados evidenciam que a atuação interdisciplinar da equipe multidisciplinar está associada a desfechos clínicos significativos, incluindo a redução das taxas de amputações maiores e menores, a diminuição do tempo de internação, a aceleração do processo de cicatrização e a redução dos custos hospitalares. Os achados reforçam que a atuação integrada entre profissionais de diferentes áreas da saúde, como enfermagem, cirurgia vascular, podologia, nutrição e fisioterapia, é fundamental não apenas para a definição do tratamento terapêutico, mas também para o desenvolvimento de ações educativas voltadas ao paciente. Conclui-se que a atuação multiprofissional é determinante para uma abordagem segura e holística do paciente com pé diabético, devendo o tratamento basear-se em um modelo colaborativo que integre as características clínicas do indivíduo, com foco preventivo, educativo e reabilitador.

Palavras-chave: Diabetes mellitus; Pé diabético; Fatores de risco.

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INTRODUCTION

Diabetes Mellitus (DM) is a chronic condition that represents one of the greatest global health challenges in the XXI century. It is characterized by high levels of glucose in the bloodstream, resulting from failures in the production or action of insulin — a hormone produced by the pancreas, responsible for facilitating the entry of glucose into cells. According to the 11th edition of the International Diabetes Federation, approximately 589 million adults between 20 and 79 years old live with diabetes in the world — this is equivalent to 1 in 9 adults. This number is projected to exceed 853 million by 2050.[1]

Among the most common complications of Diabetes Mellitus (DM), stands out the disorders related to the feet, which is characterized by insufficient blood circulation in peripheral regions, being one of the main causes of hospital admissions. This clinical condition has significant implications for individual and collective health, being an important social problem due to the disabilities generated, recurrent hospitalizations and high care costs.[2] Among the most frequent complications of DM, we highlight the changes in the feet, which result mainly from the association between peripheral neuropathy and peripheral arterial disease. This condition, known as diabetic foot, is one of the main causes of hospital admissions and non-traumatic amputations, generating disabilities, high costs and strong social repercussions. Etiopathogenesis involves multiple factors: loss of protective sensitivity, impairment of circulation, structural deformities, mechanical overload and use of inappropriate footwear, favoring the progression of simple lesions to severe infections and amputations.[3]

Despite advances in clinical and surgical management, the diabetic foot remains a challenge for health systems due to the high incidence of relapses, treatment adherence difficulties and the absence of standardized protocols for multiprofessional follow-up. In this context, multidisciplinary assistance has been highlighted as a fundamental strategy, since it makes it possible to integrate knowledge and practices of different health professionals, favoring comprehensive care, the prevention of complications and functional rehabilitation.
Given this scenario, the following guiding question arises: What is the relevance of the multiprofessional team in assisting patients with diabetic foot?

Thus, the present study aims to analyze the importance of multidisciplinary assistance in the treatment of diabetic foot, highlighting its benefits for the prevention of complications and for the rehabilitation of patients.

MATERIAL AND METHODS

This study is organized as an integrative review of the literature, a methodology that allows to gather, critically evaluate and synthesize research results on a specific topic, providing a comprehensive understanding of the phenomenon investigated. This approach is appropriate to the objective of the present study, since multidisciplinary assistance in diabetic foot treatment involves multiple clinical, social and educational dimensions, requiring the integration of different types of evidence.

The research was conducted in April 2025, through bibliographic search in the following databases: Virtual Health Library (VHL) — covering the Nursing Database (BDENF), Latin American and Caribbean Health Sciences Literature (LILACS), the Medical Literature Analysis and Retrieval System Online (MEDLINE) and the Índice Bibliográfico Español en Ciencias de la Salud (IBECS) —, in addition to the PubMed/MEDLINE platform. These bases were chosen for their thematic coverage and international relevance in the health area.

The descriptors used were: "Foot Ulcer" and "Multidisciplinary Team", identified in the Health Sciences Descriptors (DeCS) and in the Medical Subject Headings (MeSH). The terms were combined by the Boolean operator AND, in order to increase the accuracy of the search. The publication period considered was from 2020 to 2025.

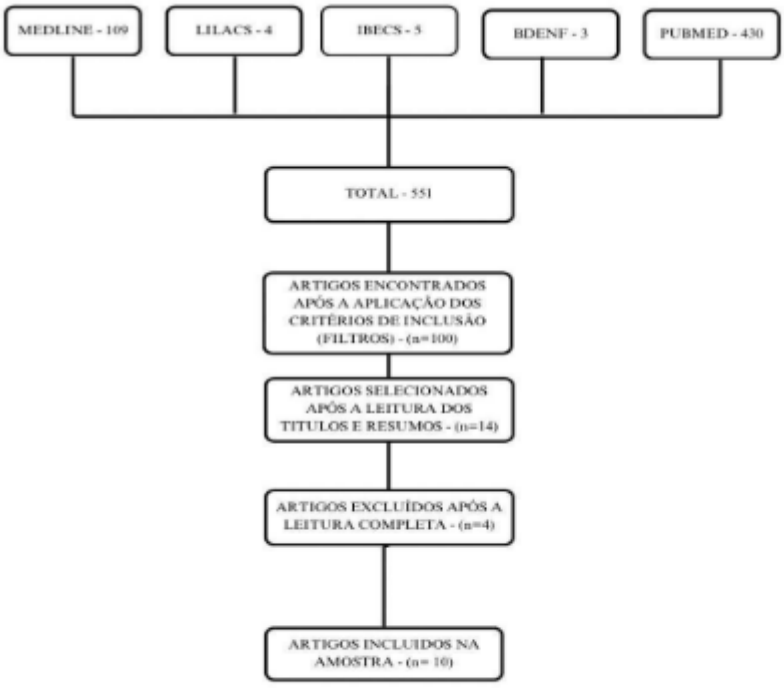
Original articles were included, available in full, published in Portuguese, English or Spanish, that addressed the performance of the multiprofessional team in the prevention and treatment of diabetic foot, and that were aligned with the objective of this review. Were excluded: simple abstracts, theses, dissertations, monographs, course completion papers, literature reviews and studies that do not directly discuss multiprofessional assistance to patients with diabetic foot.

The selection of studies took place in three stages: 1) reading of titles and abstracts, for initial triage of relevance; 2) reading in full of potentially eligible studies; and 3) critical analysis and synthesis of articles included, according to the established criteria.

Initially, 551 studies were identified: 122 in the Virtual Health Library (VHL) — being 109 in MEDLINE, 4 in LILACS, 3 in BDENF, and 5 in IBECS — and 430 in PubMed. After applying the inclusion criteria and filters (language, availability of the full text, year of publication and thematic relevance), 100 articles remained for reading titles and abstracts.

In the next step, reading the titles and abstracts resulted in the selection of 14 articles for full reading. Of these, four were excluded because they did not fully meet the methodological criteria and did not directly address multiprofessional assistance. Thus, the final sample of the integrative review was composed of 10 articles, as shown in the selection flowchart (Figure 1).

FIGURE 1: Flowchart of the selection process for studies included in the integrative review. João Pessoa, Paraíba, Brazil, 2025.



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RESULTS

The bibliographical search carried out in the databases resulted initially in 551 publications. After applying the inclusion and exclusion criteria, as described in the methodology, 10 studies composed the final sample of this integrative review.

These articles, published between 2020 and 2025, presented varied methodological designs, including observational studies, retrospectives, case series and clinical reports, reflecting the diversity of approaches to the topic. In all, the presence of multidisciplinary teams was associated with better clinical outcomes, such as reduced amputation rates, shorter hospitalization time, higher healing rate and decreased hospital costs.

Quadro 1: Descrição dos estudos que compõe a revisão integrativa. João Pessoa – PB, 2025.

ID	Author/ Year	Title	Objective	Methodological Design	Results
S-1	Hou et al. (2021)	*Will multidisciplinary collaboration reduce disability rates in diabetic foot (2009–2019)?*	To analyze the impact of multidisciplinary cooperation on diabetic foot care in China.	Retrospective observational study with 762 patients.	Multidisciplinary collaboration reduced the rate of above-knee amputations (3.63%) and decreased the average length of hospital stay and the number of interventions.
S-2	Manji et al.(2021)	*Effectiveness of a Multidisciplinary Limb Preservation Program in Reducing Regional Hospitalization Rates for Patients With Diabetes-Related Foot Complications*	To compare hospitalization rates and length of stay between regions with a multidisciplinary model and a conventional model.	Retrospective and comparative observational study.	The TFM model showed lower hospitalization rates and 21% shorter hospital stays than the conventional model.
S-3	Zamzam et al.(2020)	*A new acute multidisciplinary care pathway for people hospitalized with diabetic foot ulcer*	To describe the implementation and evaluation of a multidisciplinary protocol for acute diabetic ulcers.	Retrospective cohort study of 82 hospitalizations.	There was a reduction in hospital stays and hospital costs, with good clinical and surgical outcomes.
S-4	Xu et al.(2023)	*A Multidisciplinary Team Approach for Diabetic Foot Ulcer: A Case Study*	To report a case treated by a multidisciplinary team.	Case report	After three months of follow-up with debridement, negative pressure therapy, and health education, complete healing was achieved.
S-5	LO et al.(2022)	*Clinical and economic outcomes of a multidisciplinary team approach in a lower extremity amputation prevention programme for diabetic foot ulcer care in an Asian population: A case-control study*	To evaluate the clinical and economic outcomes of a multidisciplinary Asian program.	Case-control study (n=201).	There was a decrease in amputation rates (both minor and major) and an annual cost reduction of US$1.86 million.
S-6	Choi et al. (2021)	*Impact of multidisciplinary inpatient care on diabetic foot infections*	To evaluate the impact of multidisciplinary care on hospitalized diabetic foot infections.	Retrospective audit.	There was a trend toward shorter hospital stays and a reduced need for major amputations.
S-7	Brekelmans et al. (2023)	*Recurrent diabetic foot ulcers: Results of a maximal multidisciplinary approach including reconstructive foot/ankle surgery*	To present the outcomes of patients with recurrent diabetic foot ulcers and/or Charcot neuroarthropathy treated using a multidisciplinary protocol.	Case series (n=35).	Of the 35 patients, 69% achieved complete healing, 77% maintained mobility, 14% underwent amputations, and there were no deaths.
S-8	Guzmán et al.(2023)	*Next Steps: Teaching Future Generations an Interprofessional Approach to Diabetic Foot Ulcer Care*	To evaluate the effectiveness of interprofessional teaching sessions focused on the care of patients with diabetic foot ulcers.	Comparative, observational and retrospective.	Patients treated with a multidisciplinary approach had a lower rate of reamputation (2.7% vs 47.1%), greater clinical wound improvement (91.2% vs no data; dropped to 78.2% during the pandemic), greater complete healing (77.8% vs 31.4%), lower overall reamputation (12.6% vs 47.1%), and lower recurrence (11.7% vs 100%) compared to patients without a multidisciplinary approach ($p < 0.0001$ for healing, overall reamputation, and recurrence).
S-9	Patry et al.(2020)	*Outcomes and prognosis of diabetic foot ulcers treated by an interdisciplinary team in Canada*	To evaluate the clinical outcomes and prognosis of diabetic foot ulcers treated by an interdisciplinary team.	Retrospective observational cohort of 140 patients treated between 2012 and 2018	77.9% complete healing within 12 months, with an average time of 116 days and only 13.6% amputations. A reduction of ≥41.8% in the wound area in the first four weeks
E-10	Macfarlane et al. (2024)	*Effect of a multidisciplinary team approach on the management of diabetic foot ulcers on the Central Coast: A review of the Gosford Hospital High-Risk Foot Clinic*	To evaluate the implementation of a multidisciplinary approach in the High Risk Foot Clinic at Gosford Hospital.	Retrospective cohort	The multidisciplinary approach reduced the mean healing time by 6.2 weeks ($p = 0.021$) and increased the number of healed ulcers by 10.1% at 52 weeks. There was also greater identification and treatment of vascular diseases, indicating better clinical management and integration between specialties, with a positive impact on patient recovery.

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DISCUSSION

The results of this integrative review demonstrate that multidisciplinary care exerts a direct and positive influence on the clinical outcomes of patients with diabetic foot, reflected in reduced amputation rates, acceleration of the healing process, shorter hospital stay and reduction of care costs. Such evidence corroborates international and national studies that highlight the decisive role of multiprofessional action for the effective management of this complex syndrome. Thus, the studies included in this review consistently detail the different impacts of this approach on clinical and organizational outcomes of care.

The study S1 showed a decrease of 3.63% in amputations above the knee and a significant reduction in the disability score among patients treated by integrated teams, demonstrating the direct impact of the structuring of collaborative models on the clinical prognosis. These findings are consistent with the results of Zúñiga et al. (2023), which observed a significant decrease in the rates of major amputations after the implementation of multiprofessional teams in specialized centers.[4-5]

Similarly, study S7 revealed that 69% of patients achieved complete healing in an average of 75 days, and 77% remained without recurrence after intensive multidisciplinary intervention, showing that the integration of specialties such as vascular surgery, orthopedics and physiotherapy favors functional preservation of the limb. Innovative multiprofessional care models also showed promising results. The study S2 compared the Toe and Flow Model (TFM) with the conventional model of care (Standard of Care – SOC) and found significant reductions in hospitalization rates and average length of stay. Similarly, S3 highlighted operational and clinical gains resulting from the standardization of care protocols and interprofessional integration, resulting in faster healing and lower hospital costs.[7-8]

The study S4 shows that the performance of the multidisciplinary health team goes beyond direct assistance, being essential in the development of educational actions for patients with diabetic foot. This condition requires a therapeutic plan that includes prevention, treatment and health education. Advising patients and family members on healthy eating, glycemic control, hygiene and injury care contributes to healing and strengthens autonomy in self-care. Such strategies reduce the risk of serious complications, such as amputations, and promote better quality of life. These findings reinforce that the pedagogical dimension of the team is indispensable for obtaining better clinical outcomes.[9]

The global relevance of the multiprofessional approach is also observed in other contexts. The study S5 reported a significant decrease in amputations and annual costs in an Asian amputation prevention program. Similarly, another evidence identified a positive association between interprofessional collaboration and the improvement of quality of life, physical functioning and mental health in elderly patients, highlighting the importance of communication and coordination among workers.[11-12]

In the same sense, the study S6 pointed out that multiprofessional involvement in tertiary hospital reduced hospitalization time and the need for major amputations, reinforcing the effectiveness of integration between endocrinology, vascular surgery, nursing, Podiatry, nutrition, psychology and physiotherapy.[13]

In addition, the study S8, conducted in Chile, reinforces the significant disparity of clinical outcomes among patients treated with and without the multidisciplinary approach. The results showed that Multidisciplinary Management (MDM) raised the rate of complete healing to 77.8%, in stark contrast with patients without this intervention. Regarding the preservation of the limb, the group with MDM presented a considerably lower overall reamputation rate, as well as a drastic reduction in the recurrence rate after four years. These findings prove that the institutionalization of MDM is decisive for therapeutic efficacy, recovery of the affected extremity and prevention of long-term complications

Similarly, S9 showed a complete healing rate in 77.9% of the cases treated by an interdisciplinary Canadian team, reinforcing that integrated care promotes greater therapeutic efficiency and cost reduction. The S10, in turn, demonstrated that the institutionalization of specialized multiprofessional clinics for high-risk foot in Australia resulted in reduced healing time and reduced need for antibiotic therapy, confirming that collaborative care favors more resolving and safe clinical outcomes.[15-16]

In general, the reviewed studies support that the structuring of multiprofessional teams, associated with effective communication, standardization of behaviors and permanent education, is the central axis for quality care in diabetic foot management. Integrated performance not only improves the clinical prognosis, but also extends patient satisfaction, reduces complications and optimizes the use of hospital resources.

These findings reinforce that the treatment of diabetic foot should transcend the fragmented and focused approach in a single professional category. It is essential to adopt a collaborative, interdisciplinary and patient-centered model that considers the clinical, preventive, educational and rehabilitative dimensions of care.

FINAL CONSIDERATIONS

The present review study clearly shows that multidisciplinary care plays a decisive role in the treatment and prevention of diabetic foot syndrome complications. The analysis of the included studies demonstrates that the integration between different specialties, such as nursing, medicine, podiatry, nutrition, physiotherapy and psychology, results in better clinical outcomes, expressed by reducing amputation rates, acceleration of the healing process and less recurrence of lesions.

Moreover, the multiprofessional approach provides numerous direct clinical benefits, contributing to functional rehabilitation and strengthening self-care through educational actions and continuous monitoring.

The standardization of protocols, effective communication between team members and the institutionalization of integrated care models are fundamental for assistance and patient safety. The findings reinforce that the treatment of diabetic foot should transcend the isolated performance of professionals, being structured under a collaborative model that involves different dimensions of care, clinical, preventive, educational and rehabilitative.

Thus, the guiding question of this study is answered by demonstrating that the multiprofessional team is essential for the integral management of this syndrome, acting not only in reducing complications, but also in promoting autonomy and quality of life of the patient. Beyond this, it is recommended that future research deepen the evaluation of the effectiveness of these models in the context of Brazilian primary and hospital care, considering structural and operational challenges that still limit the consolidation of multiprofessional practice in the health system.

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